Prostate Adenocarcinoma Presenting as a Large Supraclavicular Mass

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Metastatic prostate cancer is classically associated with bony or pelvic lymphatic metastasis. This case review represents an unusual case of prostate cancer presenting with a large left supraclavicular neck mass.
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A 76-year-old white male presented at the emergency room with nausea and vomiting for several days as well as a large left neck mass that had grown in size over the previous 2 months. He reported having intermittent loose stools and a 30-lb weight loss over the previous 2 months. He denied any fever, chills, night sweats, abdominal/flank pain, hematuria, or melena. His past medical history was significant for schizophrenia, which had been stable for the past 40 years. His past surgical history included esophageal surgery in 1950 secondary to accidental ingestion of chlorine. He had smoked 3 to 4 packs of cigarettes per day for 20 years, but had stopped 30 years previously.

Physical examination revealed a thin, elderly man with a large, firm, 12 cm, multilobulated mass on the left anterolateral aspect of the neck (Figure 1). He was afebrile and hemodynamically stable. His abdominal examination identified a firm, nontender mass in the right and left abdomen. The genitourinary examination revealed a normal phallus and bilateral descended testes without masses. His prostate was slightly enlarged with no evidence of induration or nodules.

Laboratory results on presentation at the emergency room included a complete blood count (white blood cells, 5.5 $\times$ 10^9/L; hematocrit, 35.8 mL/dL; platelets, 223 $\times$ 10^9/L) and basic chemistry (sodium, 132 mEq/L; potassium, 6.2 mEq/L; chloride, 95 mEq/L; carbon dioxide, 19 mEq/L; blood urea nitrogen, 111; and creatinine, 23 mg/dL). The prothrombin and partial thromboplastin times were 14.5 and 60 seconds, respectively. A serum prostate-specific antigen (PSA) was not obtained by the medical service but was obtained several days after admission upon recommendation of the urology consultant, and was 326 ng/mL.

Figure 1. *Patient with large neck mass.*

A Foley catheter was placed. There was no residual urine in the bladder and no urine output after inserting the catheter. The patient was admitted to the medical intensive care unit, and emergent hemodialysis was initiated. Computed tomography scan (CT) of the abdomen/pelvis demonstrated diffuse retroperitoneal adenopathy displacing the aorta, inferior vena cava, renal veins, and bilateral renal dilatation (Figure 2). CT of the neck revealed multiple bulky, homogeneous, internal jugular, spinal accessory, and transverse cervical chain lymph nodes involving the left infrahyoid neck (Figure 3). CT of the chest demonstrated large soft tissue mass extending from the left side of the neck into the mediastinum.

After giving 2 units of fresh frozen plasma and 5 units of cryoprecipitate to correct the coagulopathy, bilateral ureteral stents were attempted but were unsuccessful. Subsequently, a right percutaneous nephrostomy tube was placed, which drained clear urine, and the creatinine level improved to 1.4 mg/dL over 2 weeks.

Fine/core needle biopsies of the neck mass revealed adenocarcinoma of the prostate, moderately differentiated (Figure 4). The tumor cells stained positive for PSA (Figure 5) and pan keratin AE1/AE3. The tumor cells stained negative for alpha fetoprotein, CEA, and CD 45. To confirm the diagnosis, prostate biopsies were performed. The first 12 prostate biopsies demonstrated only focal squamous metaplasia and were negative for carcinoma. Another 12 needle biopsies were performed which revealed a Gleason score of 8/10 adenocarcinoma of the prostate. Interestingly, only one of the total of 24 cores were positive for cancer. Bone scan revealed a metastatic lesion in the left inferior ramus of the pelvis. Hormonal therapy was started, and subsequently the patient underwent a bilateral orchiectomy. The PSA one month after initiating hormonal therapy was 190 ng/mL.

Discussion

Prostate cancer is the most commonly diagnosed cancer and the second leading cause of cancer death in men.[1] Prostate carcinoma is known to spread via three mechanisms: local extension, hematogenous dissemination, and lymphatic metastasis.[2] Local invasion of prostate cancer into the urethra, bladder neck, and trigone and seminal vesicles is not uncommon. The rich venous plexus of Batson is implicated as the route of hematogenous dissemination of prostate adenocarcinoma to the pelvic bones, femur, lumbar spine, thoracic spine, and ribs. Lymphatic spread to the obturator, hypogastric, iliac, presacral and para-aortic nodes is a common route of metastasis. Despite the prevalence of prostate cancer, the prostate is frequently overlooked as the primary site for men presenting with cervical lymph node metastases.[3]

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Butler and colleagues[4] described enlargement of the supraclavicular

Figure 2. *CT scan of the abdomen demonstrating diffuse retroperitoneal adenopathy displacing the vessels with bilateral renal dilatation.*

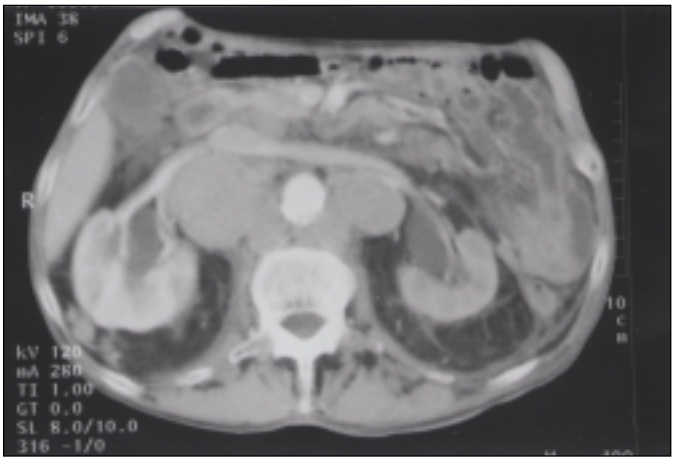
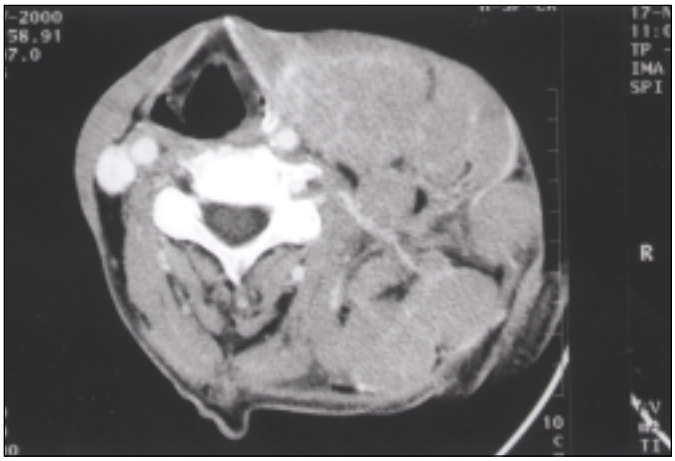


Figure 3. *CT scan of the neck with identification of multiple bulky, homogenous nodes involving the left neck.*



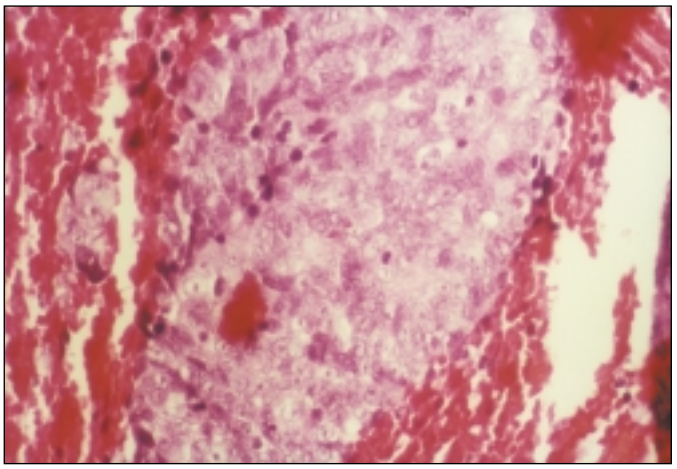


Figure 4. *Photomicrograph of core biopsy of the neck mass, showing adenocarcinoma of the prostate, moderately differentiated.*

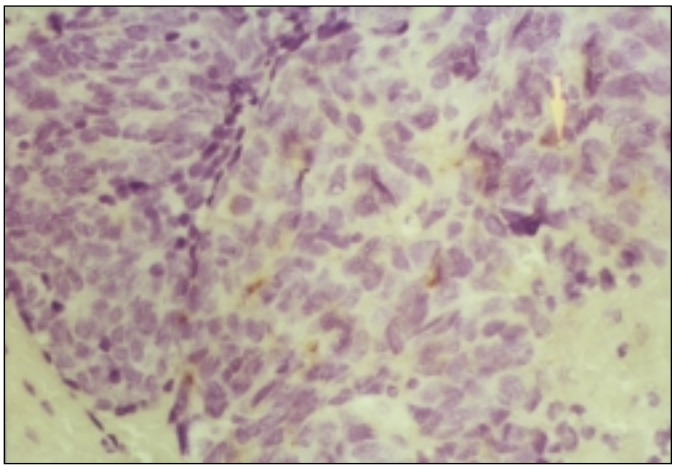


Figure 5. *Photomicrograph of the tumor cells of the neck mass, demonstrating PSA staining.*

lymph nodes as the initial presenting sign in 19 patients with previously unrecognized prostatic carcinoma. The left-sided supraclavicular nodes were much more commonly involved than those on the right, presumably as the result of spread via the thoracic duct. The tentative initial clinical diagnosis was metastatic carcinoma in 18 patients (lung, stomach, colon) and lymphoma in 1 patient. Of these 19 patients, the diagnosis was confirmed by prostate biopsy in 14 men. Interestingly, only 42% had abnormal digital rectal examination (DRE), and 58% had a normal bone scan. Our patient also had a normal DRE, and his prostate biopsy demonstrated adenocarcinoma in only 1 of 24 cores. He had a markedly elevated PSA of 326 ng/mL. It is interesting that the patient in our report had a normal prostate examination and low tumor volume, despite gross lymphatic metastases. Cho and colleagues,[5] in their series of 26 cases of metastatic prostate carcinoma in supradiaphragmatic lymph nodes (15 of these cases were supraclavicular lymph nodes), reported that 42% had normal rectal examination, 35% had no evidence of bone metastases, and 24% had a normal serum acid phosphatase. As a result, the authors recommended that metastatic prostate cancer should be ruled out in all men over 45 years of age presenting with carcinoma of unknown primary origin in left-sided supradiaphragmatic lymph nodes, even in the absence of abnormal rectal examination, bony disease, or elevated serum acid phosphatase.

Prostate carcinoma may be ruled out using immunoperoxidase stain for PSA and PSAP.

Saeter and colleagues[6] reported that in 35 patients with nonregional lymphatic spread from prostate cancer, the left supraclavicular fossa was the most common site of spread in 24 (69%) of the cases; 80% of the patients had elevated acid phosphatase, and 75% had abnormal DRE. Treatment included estrogen/orchiectomy, with a response rate of 72%. The mean time to progression was 18 months, and the 5-year survival rate was only 13%. In the Butler series, 7 patients were treated with estrogen, and 10 patients were treated with estrogen and orchiectomy, with a median survival time of 2 years.[4]

Immunoperoxidase staining with PSA and prostate-specific acid phosphatase (PSAP) has been shown to be a reliable means of establishing the diagnosis of metastatic prostate cancer.[5] Weak false-positive staining for PSAP has been reported in breast and renal cell carcinomas, granulocytes, islet cells, gastric parietal cells, and hepatocytes. Though PSAP and PSA react with the vast majority of primary and metastatic prostate carcinomas, poorly differentiated prostatic carcinomas tend to stain less extensively with both PSA and PSAP than do more well-differentiated tumors.[7] Epstein and colleagues[8] reported that tumors with foci of weak or negative PSA immunoreactivity behaved more aggressively than those with a uniformly positive reaction. Our specimen was focally positive for PSA staining.

In conclusion, in the presence of carcinoma of unknown primary origin with left supraclavicular nodal involvement in a man over 45 years

of age, the diagnosis of metastatic prostatic carcinoma should not be overlooked even in the presence of a normal DRE. The establishment of a diagnosis of metastatic prostate carcinoma is important, because widespread prostate cancer may be hormonally responsive. Prostate carcinoma may be ruled out using immunoperoxidase stain for PSA and PSAP. ■

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